

Abstract

A system and method of operation for a piezoelectric transducer is described which utilizes a mesa structure interposed between a piezoelectric material element and a chamber diaphragm. The mesa structure may further comprise a series of mesa openings at least partially filled with adhesive and mesa grooves. The system can be used as a sensor where a net motion to the diaphragm causes a net charge equal to the sum of the charges on each piezoelectric diaphragm. Alternatively, the system can be used as an actuator wherein an applied voltage causes movement of the piezoelectric transducer and the chamber diaphragm.